



# Rail Baltica in Economic Focus

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 Rail Baltica



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Urbanization, an aging population, and sustainable transport policies drive the need for the efficient integration of railway infrastructure into the multi-modal transport system, positioning it as the backbone of future mobility.

Success requires progress in service quality, capacity, reliability, life cycle, energy costs, and interoperability within the railway sector all with the same ultimate goal: the end user in mind. Dive into our next edition of Rail Baltica in Economic Focus!



## In this edition of "Rail Baltica in Economic Focus," we explore the following subjects

### 01 **The relation between the introduction of new rolling stock and increased passenger demand in the Baltics**



We explore the integration of new rolling stock into the existing railway network in the Baltics, aiming to answer the question of the relationship between investments in new rolling stock and increased passenger demand.

### 02 **Maximizing economic potential: the role of high-speed railway infrastructure in regional development and spatial economics**



In this article, we explore how high-speed railway infrastructure can extend the economic growth of large urban hubs to intermediate towns and examine the role that station location and provided services play in the equation of success.

### 03 **Fluctuations in material prices**



Fluctuations in construction material costs can pose risks to the implementation of infrastructure projects. In this section, we provide the latest insights into material and construction quarterly prices.

### 04 **Promoting sustainability and strengthening climate resilience in European transport infrastructure**



This article examines Rail Baltica's initiatives toward resilience and decarbonization in light of the growing climate crisis, highlighting how environmentally conscious infrastructure projects can be transformative by leading the charge in addressing climate challenges and fostering sustainable mobility across the Baltic region.



Visualisation of Rail Baltica Vilnius station

# 01

## The relation between the introduction of new rolling stock and increased passenger demand in the Baltics

Mobility drivers such as urbanisation and ageing population, as well as sustainable transport policies, call for efficient integration of railway infrastructure in the multi-modal transport system, in order to promote railway as the backbone of the future mobility. To succeed, railway sector needs to progress in terms of quality of service, capacity, reliability, life cycle and energy costs as well as interoperability<sup>1</sup>. One aspect that passengers value is the quality of the rolling stock; therefore, improvement of rolling stock quality must be seen as an important issue for the railway industry, given that such upgrades need significant financial investment. Careful consideration of current fleet condition, capacity needs, lifecycle cost, available financing, operational efficiency and future-proofing must be made before the acquisition of new vehicles.

This article will focus on the integration of new rolling stock into the existing railway network in the Baltics, thus aiming to answer the question of what is the relation between

investments in new rolling stock and increased passenger demand. Understanding capacity needs by analysing current and projected passenger demand is one of the first steps in smart decision making. However, improved rolling stock brings upgraded features, amenities, and better comfort levels, which can attract more customers, and additionally ensure better accessibility for passengers with disabilities or reduced mobility, thus broadening the passenger base by making rail travel more inclusive and appealing to a wider range of individuals.



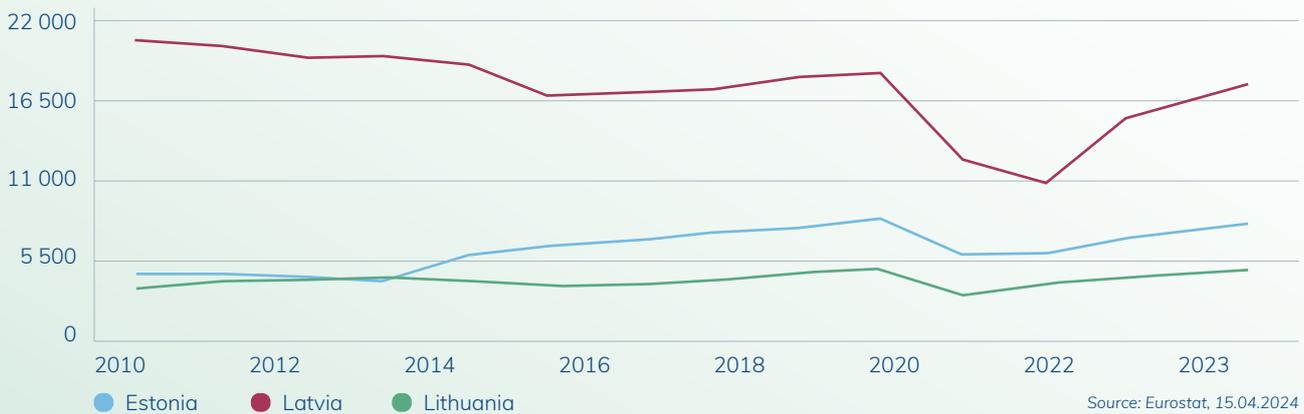
Before acquiring new vehicles, careful consideration must be given to the current fleet condition, capacity needs, life cycle cost, available financing, operational efficiency, and futureproofing.



<sup>1</sup> Peris E., Goikoetxea J. (2016). Roll2Rail: New Dependable Rolling Stock for a More Sustainable, Intelligent and Comfortable Rail Transport in Europe. Retrieved from: <https://doi.org/10.1016/j.trpro.2016.05.294>

According to Eurostat data, there was a significant rise in the number of railway passengers in Estonia and Lithuania up until 2020 when the world was hit by the Covid-19 pandemic – in 2019, passengers per year reached around 8 million in Estonia and around 5 million in Lithuania. In 2023, the number of passengers has almost reached the pre-pandemic level in both countries. While in Latvia, the drop in passenger flow after pandemic was more dramatic reaching a low point of 11 million in 2021 compared to 18.6 million in 2019. Last year the numbers have gone up significantly reaching slightly above 17 million of annual passengers transported by rail.

### Passengers transported per year (thousand pax)



By dwelling deeper into the Estonian case, it can be seen that a steady increase in passenger numbers started a decade ago – in 2013.<sup>2</sup> This coincided with the time when Estonian state-owned rail operator Elron launched 18 electric trains, thus marking the first significant step towards higher frequency of trips along all routes across Estonia. A year later, the fleet was supplemented by 20 diesel trains, thus increasing the capacity of the rail network even further. According to Elron, there is an especially large increase in the number of longer trips – in 2021 the increase was by 11%.<sup>3</sup> Additionally, during peak periods almost the entire train fleet is in use thus making it more evident that further upgrades are necessary to respond to growing passenger demand.<sup>4</sup>

The promotion of rail travel and renewal of the passenger rolling stock fleet have also been recognized as key priorities by Lithuanian railway operator LTG Link. By signing the agreement on Passenger Transport by Rail with the Ministry of Transport and Communications, LTG Link has set an ambitious objective to increase the number of passengers transported by train to 6 million by 2025 and up to 10 million by 2030.<sup>5</sup> Looking at the statistics, the likelihood of reaching the set objectives is plausible. LTG Link will acquire 9 electric trains for intercity services and 6 battery-electric FLIRT units for non-electrified lines within the country. The intercity trains can accommodate 200 seated passengers and provide space for bicycles.<sup>6</sup> Such an upgrade in terms of capacity making it possible to accommodate more passengers per journey, as well as better comfort levels can certainly support the long-term vision of promoting rail travel across the country.

<sup>2</sup> Elron (2023). Trains. Retrieved from: <https://elron.ee/en/elronist/elroni-rongid>

<sup>3</sup> Elron (2022). Last year, a total of 6.1 million journeys were made on Elron's trains. Retrieved from: <https://elron.ee/en/elronist/uudised/last-year-total-61-million-journeys-were-made-elrons-trains>

<sup>4</sup> Elron (2020). More than 45 million train rides in 7 years. Retrieved from: <https://elron.ee/en/elronist/uudised/more-45-million-train-rides-7-years>

<sup>5</sup> Ministry of Transport and Communications (2023). Ministry of Transport and Communications and LTG Link Sign Agreement on Passenger Transport by Rail. Retrieved from: <https://sumin.lrv.lt/en/news/ministry-of-transport-and-communications-and-ltg-link-sign-agreement-on-passenger-transport-by-rail>

<sup>6</sup> Railtech (2023). Stadler makes debut on Lithuanian rail market with battery-electric trains. Retrieved from: <https://www.railtech.com/rolling-stock/2023/06/22/stadler-makes-debut-on-lithuanian-rail-market-with-battery-electric-trains/>

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Similarly in Latvia, the acquisition of 32 electric trains can be viewed as a way of promoting rail travel. Back in 2019 when SIA “Pasažieru vilciens” signed the agreement with the manufacturer, there had been a moderate but steady growth in terms of passenger demand between 2015 and 2019, thus indicating the potential growth in demand in the future. Although, Latvia experienced an approximately 31% decrease in passengers transported per year from 2019 to 2020 compared to other Baltic countries following a 33% increase by the end of 2023, renewed rolling stock can generate even larger interest among potential passengers, encouraging them to choose rail travel and thus strengthening more sustainable way of commuting.

Overall, monitoring passenger demand can help in strategic decision making, especially when it comes to deciding whether purchasing of additional rolling-stock can bring larger benefits compared to the needed investments. Passengers are more likely to choose rail travel when they perceive it as a comfortable and enjoyable mode of transportation. The Estonian example shows that the causality between a renewed fleet, along with higher frequency of trips, may lead to growing customer base. Nevertheless, comprehensive analysis and data tracking is necessary before making any decision on upgrading the rolling stock. Such decisions must go hand in hand with the resolution to improve passenger experience, increase capacity, enhance reliability and improve safety.



Shutterstock image

# 02

## Maximizing economic potential: the role of high-speed railway infrastructure in regional development and spatial economics

The New Economy Geography theory emphasizes the interplay between agglomeration, the concentration of economic activities in certain areas, and the spread of economic activities across different locations, known as dispersion. The theory suggests that economic factors, such as economies of scale and transportation costs, influence the clustering of industries and businesses in specific regions or cities. This is evident in the Baltics, where economic activity is typically concentrated around the capitals, but further regions are characterized by low population density. However, to ensure greater social and economic cohesion across the region in the future, it is vital to balance economic activities in core cities with efforts to spread opportunities to surrounding areas.

In this article, we explore how high-speed railway infrastructure can extend the economic growth of large urban hubs to intermediate towns and examine the role that station location and provided services play in the equation of success.

Historically, transportation network have been pivotal in driving the development

of both national and regional economies. In this context, high-speed railway lines hold significant potential by fostering increased agglomeration processes. It has been argued that the mobility stimulated by high-speed rail can open new and more affordable housing markets to workers, reduce the cost of living, and create positive spillover effects of economic growth in non-urban areas.<sup>1</sup>

High-speed rail opens up more opportunities for people to improve their overall quality of life by enabling residents to access the advantages of larger urban areas while residing in a "second tier" city away from the drawbacks of pollution, noise, high housing costs, and overpopulation. Economists at the University of California, Los Angeles, have argued that high-speed rail can unlock new location opportunities not only for residents but also for companies. These companies can have more inexpensive offices in second-tier cities and offer quality jobs there while retaining their headquarters in larger urban hubs.<sup>2</sup> Additionally, other scholars argue that high-speed railway infrastructure has the potential to positively affect the labour market and increase the level of economic activity among the population.<sup>3</sup>

<sup>1</sup> Bella Lorenz, (2020). High-Speed Rail Benefits Small Towns and Large Cities. Retrieved from: <https://www.theurbanist.org/2020/07/30/high-speed-rail-benefits-small-towns-and-large-cities/>

<sup>2</sup> Mathew E. Kahn, Aiqi Zheng, 2013. China's bullet trains facilitate market integration and mitigate the cost of mega city growth. Retrieved from: <https://newsroom.ucla.edu/releases/bullet-train-study-finds-remote-244304#:~:text=Because%20high%20speed%20rail%20effectively,from%20the%20pollution%20and%20congestion>

<sup>3</sup> Nakip Sabirov, (2022). Issues of Assessing a Feasibility of Building High-speed Railway Lines in Areas with Low Population Density, Transportation Research Procedia, Volume 61, 2022, Pages 54-58, ISSN 2352-1465, <https://doi.org/10.1016/j.trpro.2022.01.009>.

However, while a high-speed railway line itself can indeed be a significant catalyst for regional development as it shortens the distance by time, the actual link connecting the city or town with its environment is the railway station. Here, many modalities meet, and various types of activities, functions, and facilities are located, thus providing the city with a much-needed



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economic impulse.<sup>4</sup> Nevertheless, case studies show that the location of the train station can either truly improve the surrounding area or, in other cases, be less successful and thus lead to a situation where station locations suffer from a lack of investments, little commercial interest, and empty buildings.<sup>5</sup>

A controversial case study is the station area Lille Europe, also known as Euralille. The station was built in the early 1990s to facilitate train travel among the United Kingdom, Belgium, and the Netherlands, with the ambition to transform Lille from a place located in a corner of France to a central location within Europe. Unfortunately, from today's perspective, Lille Europe station is not the most important node in Lille for high-speed trains as initially foreseen, and thus, it is considered a very minor train station compared to the nearby located Lille Flanders. Additionally, in terms of the design of the station area, Lille Europe station has faced challenges such as lower density and

<sup>4</sup> Jong, M. (2009). Lille Europe: a success story.

<sup>5</sup> Jong, M. (2009). Lille Europe: a success story.

<sup>6</sup> Jong, M. (2009). Lille Europe: a success story.

occupancy rates of commercial and office spaces despite an attractive pricing policy. The main critique focuses on the fact that the station provides only one type of accessibility, meaning high-speed services. However, for business to grow, it is important to attract regular commuters who use regional services.<sup>6</sup> In other words, such an assumption suggests that the development of more local regional services on the high-speed lines can have an impact on patterns of commuting and thus boost the spread of economic activities across different locations.

Overall, while high-speed railway can bring substantial economic benefits, its impact on social disparity within a region depends on various factors, including how it is integrated into broader regional development plans, the nature of local policies, and the inclusivity of planning processes.

Lille Europe railway station





Rail Baltica mainline construction in Lithuania. Photo credit: LTG Infra

# 03

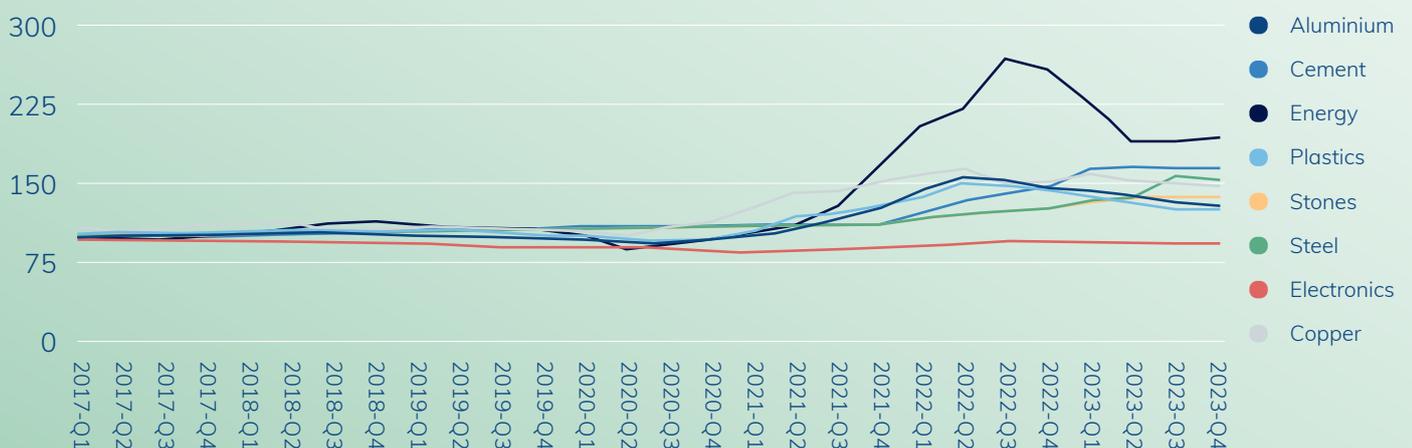
## Fluctuations in material prices: index prices remain stable

Fluctuations in construction material costs can pose risks to the infrastructure project implementation, leading to sudden expense changes and potential delays due to limited availability of materials. Keeping track of these price changes allows teams handling major projects such as Rail Baltica to control costs, reduce risks, stay on schedule, uphold contractual agreements, and communicate well with stakeholders.

The variation of producer price indexes for construction materials and energy (source: Eurostat) are shown graphically below. As can be seen, mid-term trends appear to remain consistent.

Specifically, when comparing the values in Q4 2022 to the same period last year, aluminium, plastics and, especially, energy prices show a constant decrease (-12%, -13% and -26% respectively), whilst cement, stones & quarry and steel show an increase (12%, 9% and 20% respectively). Electronics components and copper remained substantially unchanged.

### Producer Price Indices



Material and construction quarterly prices 2017 Q1 -2023 Q4, base 2015 (Source: Eurostat)

# 04 Promoting sustainability and strengthening climate resilience in European transport infrastructure

As the climate crisis intensifies, the importance of integrating resilience to its impacts and decarbonization into infrastructure projects cannot be overstated. In the context of the Baltic States, and specifically within the ambit of the Rail Baltica, these concerns are at the forefront of planning and implementation efforts.

Greenhouse gas concentrations in the atmosphere continue to rise, record high temperatures and ocean heat have been observed, and the current mitigation pledges are inadequate to achieve the goals set in the Paris Agreement.<sup>1</sup> Billions of people are exposed to the impacts of climate change, therefore making adaptation crucial to reducing risks associated with these changes. The European Green Deal aims to transform Europe into a climate-neutral continent by 2050.<sup>2</sup> Shifting towards sustainable transportation options plays a vital role in achieving this objective. By prioritizing users and providing them with affordable, accessible, healthier, and cleaner alternatives, the Green Deal seeks to significantly increase the adoption of clean vehicles and alternative fuels while eliminating fossil fuels by 2050. Rail transport has already made progress in reducing emissions while simultaneously increasing passenger and freight capacity.

## Understanding Climate Proofing and progress in the Baltic States

Baltic region faces unique climate change trends. Our environmental teams have meticulously analyzed climate change projections, revealing a trajectory towards milder winters with reduced snowfall but heightened instances of wet snow, freezing rain, and ice formation. Summers, on the other hand, are expected to witness more frequent heatwaves, accompanied by heavier rainfall and increased wind gusts.<sup>3</sup>

These projections serve as the foundation for national adaptation plans and disaster risk management strategies. Within this framework, transport infrastructure emerges as a pivotal focal point. Given the ambitious lifespan of up to 100 years for Rail Baltica infrastructure, adaptation measures have been seamlessly integrated into the project's design guidelines. From peak flow calculations to embankment stability requirements and utility depth specifications, every aspect is meticulously crafted to ensure resilience throughout the project's lifecycle. Climate proofing involves integrating climate change mitigation and adaptation measures into the development of infrastructure projects.



Rail Baltica Saustinõmme eocoduct in Estonia

<sup>1</sup> <https://unfccc.int/process-and-meetings/the-paris-agreement>

<sup>2</sup> <https://www.europarl.europa.eu/topics/en/article/20200618STO81513/green-deal-key-to-a-climate-neutral-and-sustainable-eu>

<sup>3</sup> Study on climate change impact assessment for the design, construction, maintenance and operation of Rail Baltica railway, Tartu-Rīga-Vilnius 15-02-2019

Another critical facet, decarbonization is inherent to Rail Baltica's design. By embracing electrified high-speed rail, the project inherently reduces the environmental footprint of passenger transport, aligning seamlessly with the objectives of Sustainable Mobility. Furthermore, by adhering to the EU principle of 'energy efficiency first,' Rail Baltica aims to exclusively utilize renewable electricity, further enhancing its environmental credentials.

The tangible impact of Rail Baltica on mitigating climate change challenges is underscored by compelling figures derived from Rail Baltica climate proofing calculations and the latest Cost Benefit Analysis. Rail Baltica will provide a greener alternative to transportation methods, and

Given the likelihood of the future evolution of vehicle fleets for other modes of transportation, Rail Baltica will be realizing substantial net GHG cost reductions, estimated between EUR 2.7 billion and 2.9 billion. These benefits, quantified using European Investment Bank methodologies, incorporate the evolving shadow carbon cost, reflecting the trajectory towards expected carbon neutrality in 2050.<sup>6</sup> Similarly positive socio-economic impact will also be generated through reduction of noise and air pollution. By reducing noise pollution through a modal shift to rail, Rail Baltica will achieve between EUR 0.5 billion and EUR 0.6 billion in net noise pollution cost reduction and between EUR 0.2 billion and EUR 0.3 billion in net air pollution cost reduction.<sup>7</sup> In conclusion, Rail Baltica stands as a beacon of sustainability, resilience, and decarbonization in the realm of European transport infrastructure



By prioritizing users and providing them with affordable, accessible, healthier, and cleaner alternatives, the Green Deal seeks to significantly increase the adoption of clean vehicles and alternative fuels while eliminating fossil fuels by 2050.



Visualisation of Rail Baltica regional station

with an ambitious target of 100% renewable energy usage, the project is poised to deliver substantial carbon savings, estimated to exceed 150,000 tCO<sub>2</sub>e annually by 2030 and surpass 400,000 tCO<sub>2</sub>e annually by 2050.<sup>4</sup> Moreover, a significant reduction in fossil fuel consumption, ranging between 1.5% and 3.3% compared to historical averages, is anticipated.<sup>5</sup> This reduction is not confined solely to the transport sector but extends to broader energy consumption patterns, underscoring Rail Baltica's systemic impact.

Additionally, Rail Baltica seeks to effectuate a modal shift towards rail, further curbing greenhouse gas emissions.

and in the Baltic region. As it advances, its impact on mitigating climate change challenges and spearheading sustainable mobility serves as a testament to the transformative potential of infrastructure projects when imbued with environmental consciousness and foresight.

Last but not least, it must help investors make informed decisions regarding projects that are climate resilient and aligned with climate change goals. Key objectives include a 55% reduction in carbon emissions by 2030 and carbon neutrality by 2050. By mainstreaming climate considerations, both institutional and private European investors can align their investments with the Paris Agreement and EU climate objectives.

<sup>4</sup> Climate proofing Verification report "Verification of climate Proofing for Rail Baltica", 03-02-2023

<sup>5</sup> Reference to Rail Baltica Cost-Benefit Analysis (indicative data), 2024

<sup>6</sup> Reference to Rail Baltica Cost-Benefit Analysis (indicative data), 2024

<sup>7</sup> Reference to Rail Baltica Cost-Benefit Analysis (indicative data), 2024

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"Rail Baltica in Economic Focus" is a quarterly digital newsletter that brings together key contributors such as Rail Baltica strategy experts, transport economy analysts, logistics specialists, and other industry experts.

These individuals collectively share their knowledge and insights, offering a comprehensive perspective on the economic implications of Rail Baltica. The goal is to inform and engage subscribers, partners, and suppliers of the newsletter, providing them with updates on the project's progress and highlighting its potential as a catalyst for economic growth in the region.



Rail Baltica Webinar:

# Supplier Engagement Opportunities in 2024

**May 9,**

13:00-16:00 (EEST)

Save the date

